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For each of the following definitions, (a) write the first five terms of the sequence, and (b) determine whether the sequence is arithmetic or geometric.

1. $a_n = 3n + 5$

   (a) _____ **(b)** _____

2. $a_n = (-2)^n$

   (a) _____ **(b)** _____

3. $a_1 = 2$; $a_{n+1} = 3a_n$

   (a) _____ **(b)** _____

4. $a_1 = 3$; $a_{n+1} = a_n + 4$

   (a) _____ **(b)** _____

For each of the following sequences, (a) determine whether the sequence is arithmetic or geometric, and (b) write the <u>explicit formula</u> for the sequence.

5. **6, 12, 24, 48, 96, ...**

   (a) _____ **(b)** _____

6. **6, 12, 18, 24, 30, ...**

   (a) _____ **(b)** _____

For each of the following sequences, (a) determine whether the sequence is arithmetic or geometric, and (b) write the <u>recursive formula</u> for the sequence.

7. **20, -10, 5, -2.5, 1.25, ...**

   (a) _____ **(b)** _____

8. **2, 2.5, 3, 3.5, 4, ...**

   (a) _____ **(b)** _____

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Use an appropriate sequence formula to answer each of the following questions. Show your process neatly organized.

9. What is the 10^{th} term of the arithmetic sequence with $a_1 = 10$ and $d = 13$?

10. What is the 10^{th} term of the geometric sequence with $a_1 = 5$ and $r = 2$?

11. A certain job has a starting salary of $12,000 with a guaranteed increase of $350 per year. What will be the salary for the 12^{th} year?

12. A certain job has a starting salary of $12,000 with a guaranteed increase of 2.5% per year. What will be the salary for the 12^{th} year?

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Use an appropriate series formula to answer each of the following questions. Show your process neatly organized.

13. What is the sum of the first 10 terms of an arithmetic sequence in which $a_1 = 12$ and $d = -2$?

_____

14. What is the sum of the first 10 terms of an geometric sequence in which $a_1 = 12$ and $r = -2$?

_____

15. What is the sum of the first 10 terms of the sequence defined by $a_n = 9n - 3$?

_____

16. What is the sum of the first 10 terms of the sequence defined by $a_n = 0.25(2)^{(n-1)}$?

_____

17. What is the sum of the first 10 terms of the sequence defined by $a_{n+1} = 0.5a_n$ where $a_1 = 256$?

_____

18. What is the sum of the first 10 terms of the sequence defined by $a_{n+1} = a_n + 5$ where $a_1 = 6$?

_____

Use an appropriate series formula to evaluate each of the following. Show your process neatly organized.

19. $12 + 2 + 1/3 + 1/18 + \ldots$

_____

20. $\sum_{i=1}^{10} (-3)(2)^{(i-1)}$

_____

21. $\sum_{i=1}^{60} (3i + 1)$

_____

22. $\sum_{i=1}^{\infty} (0.7)(0.1)^{(i-1)}$

_____

Use an appropriate series formula to answer each of the following questions. Show your process neatly organized.

23. A job has a starting salary of $12,000 with a guaranteed increase of $350 per year. Find the total salary for the first twelve years.

24. A job has a starting salary of $12,000 with a guaranteed increase of 2.5% per year. Find the total salary for the first twelve years.